

## CLAIMS

1. A copper alloy foil, which contains, by mass percentage, one or more of the additive elements of from 0.01 to 2.0% of Cr and from 0.01 to 1.0% of Zr, the balance being essentially Cu and unavoidable impurities, and which has 600N/mm<sup>2</sup> or more of tensile strength, 50%ICAS or more of electric conductivity, 2  $\mu$  m or less of the surface roughness in terms of the ten-point average surface-roughness (Rz) and 8.0 N/cm or more of 180° peel strength when directly bonded with a polyimide film without roughening plating.

2. A copper alloy foil according to claim 1, wherein it further contains from 0.005 to 2.5% in total of one or more of the second additive elements selected from the group consisting of Ag, Al, Be, Co, Fe, Mg, Ni, P, Pb, Si, Sn, Ti and Zn,

3. A copper alloy foil, which contains, by mass percentage, one or more of the additive elements of from 1.0 to 4.8% of Ni and from 0.2 to 1.4% of Si, the balance being essentially Cu and unavoidable impurities, and which has 650N/mm<sup>2</sup> or more of tensile strength, 50%ICAS or more of electric conductivity, 2  $\mu$  m or less of the surface roughness in terms of the ten-point average surface-roughness (Rz) and 8.0 N/cm or more of 180° peel strength when directly bonded with a polyimide film without roughening plating.

4. A copper alloy foil according to claim 3, wherein it further contains from 0.005 to 2.5% in total of one or more of the second additive elements selected from the group consisting of Ag, Al, Be, Co, Fe, Mg, P, Pb, Sn, Ti and Zn.

5. A printed circuit board which comprises: a copper alloy foil, which contains, by mass percentage, one or more of the additive elements of from 0.01 to 2.0% of Cr and from 0.01 to 1.0% of Zr, the balance being essentially Cu and unavoidable impurities, and which has 600N/mm<sup>2</sup> or more of tensile strength, 50%ICAS or more of electric conductivity, 2  $\mu$  m or less of the surface roughness in terms of the ten-point average surface-roughness (Rz), and which is not subjected roughening plating; and, a polyimide film, which is directly bonded with the copper alloy foil and which has 8.0 N/cm or more of 180° peel strength.

6. A printed circuit board according to claim 5, wherein the copper alloy foil further contains from 0.005 to 2.5% in total of one or more of the second additive elements selected from the group consisting of Ag, Al, Be, Co, Fe, Mg, Ni, P, Pb, Si, Sn, Ti and Zn,

7. A printed circuit board, comprising a copper alloy foil, which contains, by mass percentage, one or more of the additive elements of from 1.0 to 4.8% of Ni and from 0.2 to 1.4% of Si, the balance being essentially Cu and unavoidable impurities, and which

has 650N/mm<sup>2</sup> or more of tensile strength, 50%ICAS or more of electric conductivity, 2  $\mu$ m or less of the surface roughness in terms of the ten-point average surface-roughness (Rz), and which is not subjected to roughening plating; and, a polyimide film, which is directly bonded with the copper alloy foil and has 8.0 N/cm or more of 180° peel strength.

8. A printed circuit board according to claim 7, wherein it further contains from 0.005 to 2.5% in total of one or more of the second additive elements selected from the group consisting of Ag, Al, Be, Co, Fe, Mg, P, Pb, Sn, Ti and Zn.

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